

Compliments of Institute for Research  
on Exceptional Children  
University of Illinois  
Urbana, Illinois

**10 YEARS OF RESEARCH**

*at the Institute for  
Research on Exceptional Children*

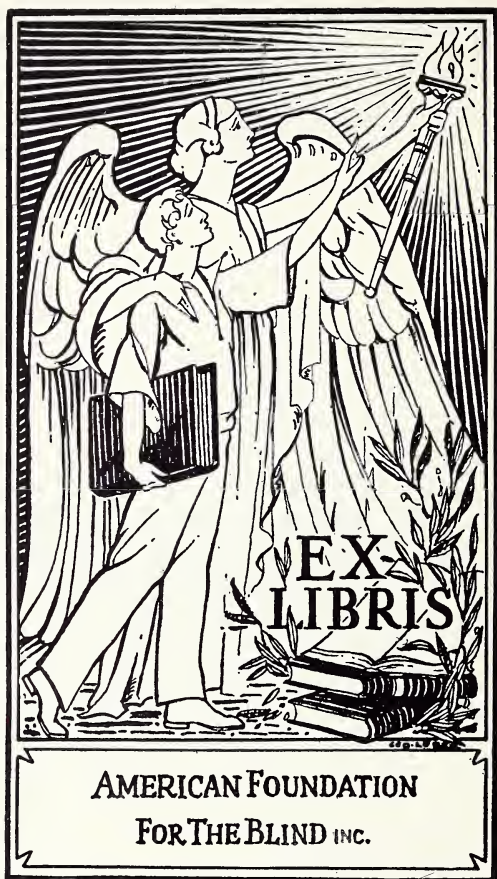
---

*Samuel A. Kirk and Barbara D. Bateman*

UNIVERSITY OF ILLINOIS 1952-1962

LC3965

k



15 WEST 16th STREET  
NEW YORK, N. Y., 10011

**10 YEARS OF RESEARCH**

*at the Institute for  
Research on Exceptional Children*

---

UNIVERSITY OF ILLINOIS 1952-1962

*Compiled by Samuel A. Kirk and Barbara D. Bateman · March, 1964*



LC 3965  
K  
copy 2

## *Foreword*

---

A major aim of public education should be to develop to the highest degree the capacities of the individual and to guide him into those areas of society which could best utilize his abilities. The attainment of this goal requires the development of a program, the provision for services and facilities, and the adjustment of teaching procedures to meet individual needs, interests, and capacities of *all* children. This basically is the meaning of the principle of universality which only in recent years has been more fully realized in the United States.

Research in the area of exceptional children was negligible a generation ago. In fact, the Institute for Research on Exceptional Children was a pioneer development in American education. This Institute was the first active research and graduate training department in this country or abroad. At its base was the cooperative relationship of state agencies and interdisciplinary relationship of the departments within the University, utilizing the theories and personnel from research areas in the behavioral sciences.

This Institute has, we believe, demonstrated the wisdom of such an organization by (1) its research, (2) its training of leadership personnel for development of services and research, and (3) its over-all contribution to the development of other centers in the United States and abroad.

During its brief ten years of life, the Institute for Research on Exceptional Children has become one of the outstanding institutes of its sort in the world. It is with great pleasure that we view the appearance of this first manuscript which brings together in one source a concise summary of the output of research conducted during this short but productive period.

ALONZO G. GRACE  
*Dean, College of Education  
University of Illinois*



Digitized by the Internet Archive  
in 2013

## *Acknowledgments*

---

It is impossible to acknowledge all those who have contributed to the research program of the Institute. Below are listed (a) the full-time staff of the Institute as of December, 1962, (b) former full-time staff members, (c) persons who have completed doctoral or post-doctoral studies, (d) members of the Advisory Committee of the Institute, and (e) organizations who have contributed to the support of research projects.

### **FULL-TIME STAFF**

BATEMAN, BARBARA D., Research Assistant Professor of Special Education  
COTTRELL, RAYMOND S., JR., Research Associate  
FARBER, BERNARD, Associate Professor of Sociology  
GALLAGHER, JAMES J., Professor of Special Education  
HENDERSON, ROBERT A., Associate Professor of Special Education  
JENNÉ, WILLIAM C., Research Associate  
JORDAN, LAURA J., Assistant Professor of Special Education  
KASS, CORRINE E., Research Assistant Professor  
KIRK, SAMUEL A., Professor of Special Education and of Psychology, and  
Director  
MOSS, JAMES W., Assistant Professor of Special Education  
PENNIMAN, MARIAN V., Research Associate  
PHILLIPS, WM. DESMOND, Assistant Professor of Special Education  
QUIGLEY, STEPHEN P., Associate Professor of Special Education

### **FORMER FULL-TIME STAFF**

ASCHNER, MARY JANE, Associate Professor, College of Education, Boston University, Boston, Massachusetts  
CROWDER, THORA, 546 North Ninth Street, Oxford, Mississippi  
GOLDSTEIN, HERBERT, Chairman, Department of Special Education, Yeshiva University, New York, New York  
HOWE, CLIFFORD E., Supervisor, Special Education, Long Beach Unified School District, Board of Education Annex, Long Beach, California  
KOLSTOE, OLIVER P., Chairman, Special Education Department, Southern Illinois University, Carbondale, Illinois



McCARTHY, JAMES J., Assistant Professor of Education, College of Education,  
University of Wisconsin, Madison, Wisconsin  
MANGAN, KENNETH, Superintendent, Illinois State School for the Deaf,  
Jacksonville, Illinois  
STOLUROW, LAWRENCE M., Professor of Education and Psychology, University  
of Illinois, Urbana, Illinois

#### **FORMER DOCTORAL AND POSTDOCTORAL STUDENTS**

ASCHNER, MARY JANE, Associate Professor, College of Education, Boston  
University, Boston, Massachusetts  
ASHCROFT, SAMUEL, Associate Professor, George Peabody College for Teach-  
ers, Nashville, Tennessee  
BATEMAN, BARBARA D., Research Assistant Professor, University of Illinois,  
Institute for Research on Exceptional Children, Urbana, Illinois  
BLACKMAN, LEONARD, Associate Professor, Teachers College, Columbia Uni-  
versity, New York, New York  
CAPOBIANCO, RUDOLPH, Director of Program Learning, Edward R. Johnstone  
Training and Research Center, Bordentown, New Jersey  
CASEY, JOHN B., Eastern Washington College of Education, Cheney, Wash-  
ington  
CLARK, SHIRLEY, Child Development Laboratory, Department of Home  
Economics, University of Illinois, Urbana, Illinois  
DOWNEY, KENNETH J., Assistant Professor, Department of Sociology, Uni-  
versity of Buffalo, Buffalo, New York  
DUNN, LLOYD M., Professor of Education and Chairman, Department of  
Special Education, George Peabody College for Teachers, Nashville 5,  
Tennessee  
ENC, MITAT E., Staff Member, Gazi Technical Training College, Middle  
East Technical University, Ankara, Turkey  
ERDMAN, ROBERT, Professor of Education and Chairman, Department of  
Exceptional Education, University of Wisconsin, Milwaukee, Wisconsin  
FALCONER, GEORGE A., Chief, Audiology and Speech Pathology Clinic,  
Veteran's Administration Hospital, Houston, Texas  
FREY, ROGER, Associate Professor of Education, Southern Illinois University,  
Carbondale, Illinois  
GOLDSTEIN, HERBERT, Professor of Education and Chairman, Department of  
Special Education, Yeshiva University, New York, New York  
HENDERSON, ROBERT A., Associate Professor, Institute for Research on  
Exceptional Children, University of Illinois, Urbana, Illinois  
HUNT, JACOB T., Professor of Education and Chairman, Division of Special  
Education, University of Arizona, Tucson, Arizona  
JOHNSON, G. ORVILLE, Professor of Education, Syracuse University, Syracuse,  
New York  
JORDAN, JUNE, Editor, *Exceptional Children*, Director of Consultative Serv-  
ices, Council for Exceptional Children, Washington, D.C.  
JORDAN, LAURA, Assistant Professor, Institute for Research on Exceptional  
Children, University of Illinois, Urbana, Illinois  
KASS, CORRINE E., Research Assistant Professor, Institute for Research on  
Exceptional Children, University of Illinois, Urbana, Illinois



LUCITO, LEONARD, Associate Professor, George Peabody College for Teachers, Nashville, Tennessee

LYLE, JACK G., Senior Lecturer, Department of Psychology, University of Sydney, New South Wales, Sydney, Australia

MCCARTHY, JAMES J., Assistant Professor, College of Education, University of Wisconsin, Madison, Wisconsin

MCNEILL, W. D. D., Associate Professor, College of Education, University of Saskatchewan, Saskatoon, Canada

MARDEN, PHILLIP, Department of Sociology, Keuka College, Keuka Park, New York

NELSON, DR. WILLARD H., Associate Professor of Psychology and Education, Florida State University, Tallahassee, Florida

NOAH, DENNIS P., Professor of Education and Chairman, Department of Education, Louisiana State University, Baton Rouge, Louisiana

OLSON, JAMES L., Assistant Professor, Department of Exceptional Education, University of Wisconsin, Milwaukee, Wisconsin

QUERESHI, MOHAMMED Y., Department of Psychology, University of North Dakota, Grand Forks, North Dakota

QUIGLEY, STEPHEN P., Associate Professor of Special Education, University of Illinois, Urbana, Illinois

ROGERS, SPAULDING, Head, Department of Psychology, Rockford College, Rockford, Illinois

ROSSER, NEIL, Associate Professor, University of North Carolina, Chapel Hill, North Carolina

SHERE, MARIE O., Assistant Professor, Speech Clinic, University of Illinois, Urbana, Illinois

SIEVERS, DOROTHY J., Chief Psychologist, Hamilton County Diagnostic Clinic, Cincinnati 29, Ohio

SMITH, ROBERT M., Assistant Professor, College of Education, University of Florida, Gainesville, Florida

SPENCER, ELIZABETH, Assistant Professor, Ball State Teachers College, Muncie, Indiana

STRASSER, HELLMUT, Psychomedizinisches Institut, 8123 Tutzing, Hauptstrasse, Munich, Germany

TISDALL, WILLIAM J., Assistant Professor, Special Education Building, Pennsylvania State University, University Park, Pennsylvania

TOMS, DELORES, Jarvis Christian College, Hawkins, Texas

WEINER, BLUMA, Assistant Professor, School of Education, University of Pittsburgh, Pittsburgh 13, Pennsylvania

WIRTZ, MORVIN A., Superintendent, Special District for the Education and Training of Handicapped Children, 2533 South Brentwood Boulevard, Brentwood, Missouri

#### **ADVISORY COMMITTEE MEMBERS**

**Illinois State Department of Mental Health  
(formerly Illinois State Department of Public Welfare):**

\*ALBAUM, JOSEPH, M.D., Superintendent, Lincoln State School, Lincoln, Illinois

\* Present members, Advisory Committee.

\*BRIELAND, DONALD, Director, Children's and Specialized Services, Department of Mental Health  
FOX, WILLIAM W., M.D., deceased, Superintendent, Lincoln State School, Lincoln, Illinois  
HAREMSKI, ROMAN, Superintendent of Child Welfare Services, Department of Mental Health  
MCCLINTOCK, HARRY W., Assistant Director, Department of Mental Health

**Illinois State Department of Public Instruction:**

\*CHUTE, OSCAR, Superintendent, Evanston Public Schools, District 65, Evanston, Illinois  
GRAHAM, RAY, deceased, Director, Division of Exceptional Children, Department of Public Instruction

**University of Illinois:**

HULETT, JAMES E., Professor, Department of Psychology  
\*HUMPHREYS, LLOYD G., Professor and Head, Department of Psychology  
HUNT, J. McV., Professor, Department of Psychology  
MILLER, P. VAN, Professor of Education  
\*MOORE, WALTER J., Professor of Education  
\*SCHNEIDER, LOUIS, Professor and Head, Department of Sociology  
SHIDELER, ERNEST H., Associate Professor of Sociology, *Emeritus*

**SUPPORTING ORGANIZATIONS**

Elizabeth McCormick Foundation Fund  
Ford Foundation  
Graduate College, University of Illinois  
Illinois State Department of Mental Health (formerly Illinois State Department of Public Welfare)  
Illinois State Department of Public Instruction  
Illinois State Psychiatric Training and Research Authority  
National Institute of Mental Health  
United Cerebral Palsy Association, Research and Educational Foundation, Inc.  
U.S. Office of Education, Cooperative Research

## *Contents*

---

THE ORGANIZATION AND PURPOSE OF THE INSTITUTE FOR RESEARCH ON EXCEPTIONAL CHILDREN .....	1
References.....	3
PREVALENCE STUDIES .....	4
Criterion Studies .....	4
Illinois State Prevalence Study .....	5
Prevalence of Trainable Children .....	5
References.....	7
THE DEVELOPMENT OF DIAGNOSTIC INSTRUMENTS .....	8
The Illinois Test of Psycholinguistic Abilities (ITPA).....	8
Test of Basic Information (TOBI).....	11
Analysis of Classroom Verbal Interaction .....	12
References.....	13
CHARACTERISTICS OF THE MENTALLY RETARDED.....	15
Psychological Characteristics of Brain-Injured Mentally Retarded Children.....	15
Arithmetic Abilities of Retarded Children .....	16
Reading Abilities of Brain-Injured Children .....	17
Reading Abilities of EMH Children.....	17
Growth Patterns of Mongoloid Children.....	17
Vocational Interests of Retarded Children.....	17
Incidental Learning of the Mentally Retarded .....	18
Social Position of the Mentally Retarded.....	18
Institutional Studies .....	19
References.....	20
SCHOOL PROGRAMS FOR THE MENTALLY RETARDED .....	22
Programs for Trainable Mentally Handicapped .....	22
Programs for Educable Mentally Handicapped .....	25
References.....	26

EFFECTS OF TRAINING THE MENTALLY RETARDED .....	27
Effects of Preschool Training on Young Mentally Retarded Children .....	27
Effects of Special Class Training .....	28
Tutoring Brain-Injured Children .....	30
Training of Psycholinguistic Disabilities .....	31
Effects of Training Mongoloid Children .....	31
References .....	32
EFFECTS OF HANDICAPPED CHILDREN ON FAMILIES .....	34
Effects of the Retarded Child on Marital Integration .....	34
The Retarded Child and His Siblings .....	35
Family Organization and the Retarded Child .....	36
Institutionalization of the Retarded Child .....	36
Family Kinship Systems and the Adjustment of Children .....	37
Groups of Illinois Parents of Retarded Children .....	37
The Cerebral Palsied Child in the Family .....	38
References .....	38
PROGRAMED INSTRUCTION .....	40
References .....	42
GIFTED CHILDREN .....	44
Educational Planning for the Gifted .....	44
Intellectual Characteristics of the Gifted .....	45
Social Status of the Gifted .....	46
References .....	47
CHILDREN WITH SENSORY DISABILITIES .....	49
References .....	50
EPILOGUE .....	51

# The Organization and Purpose of the Institute for Research on Exceptional Children

---

On July 16, 1952, the Board of Trustees of the University of Illinois passed the following resolution: "In order to advance knowledge about exceptional children and to make more effective the work of public and private agencies in their behalf, there is established at the University of Illinois an Institute for Research on Exceptional Children." The establishment of this Institute resulted from a series of meetings between representatives of the University, the State Department of Public Welfare (now the State Department of Mental Health), and the State Department of Public Instruction. At that time the state was expanding its direct services for handicapped children but was doing comparatively little to foster research or to help ameliorate the extreme shortage of technically trained personnel.

From its inception the Institute for Research on Exceptional Children operated on an interagency basis within the state in that the two state departments agreed to provide existing facilities for research purposes within institutions and public schools and to provide available staff to assist with this research, thereby utilizing the state's resources for research. Within the University the Institute has been interdisciplinary since its staff and cooperating staff come from several departments — primarily from the departments of education, psychology, sociology, and speech pathology. An advisory board consisting of two members of the Department of Public Welfare, two members of the Department of Public Instruction, and three members from as many departments of the University were appointed by President George D. Stoddard to coordinate the work between the University and the state agencies.

The stated purpose of the Institute was to conduct research, to facilitate research by others, and to provide research activities for the



training of graduate students. Arrangements were made for the Institute staff to hold joint appointments in the Institute and in their various University departments. In addition, personnel of the Department of Public Welfare and the Department of Public Instruction who conducted research under the auspices of the Institute held academic rank on the University staff.

The Institute for Research on Exceptional Children moved toward its goals of increasing knowledge about exceptional children and improving the effectiveness of special education programs by conducting systematic, longitudinal, and comprehensive interdisciplinary research. Ten years ago the failure of research to keep pace with the rapidly expanding services provided for exceptional children was partially attributed to such factors as (a) a lack of highly trained researchers within the field of exceptionality, (b) the isolated and fragmentary nature of the research that was conducted, (c) concentration on medical and psychological diagnostic research to the exclusion of educational and remedial programs, and (d) the failure to attack the complex problems of exceptional children from the required interdisciplinary approach (Kirk & Spalding, 1953).

A major function of any research organization, in addition to conducting research, is to train leadership personnel at the graduate level. During the ten years the Institute has been in existence, approximately thirty-five students completed doctor's degrees or a program of post-doctoral study in the field of exceptional children.

At the 1957 convention of the Council for Exceptional Children, S. A. Kirk (1957) pointed out that one of the major problems in the training of leaders in special education is that of determining what constitutes an advanced degree in this field. The philosophy and standards of the advanced doctoral program in special education at the University of Illinois were summarized as (a) admit only superior students who possess a master's degree and a teaching certificate in some area of exceptionality, and two years of classroom experience; (b) offer students advanced courses of a conceptual and integrative nature (over and above methods courses); (c) require a full-time, two-year program after the master's degree plus a thesis which demonstrates scholarly potential; (d) require a knowledge of statistics, education, psychology, general education, and a related discipline such as administration, experimental psychology, or sociology.

In 1958 the Division on Teacher Education of the Council for Exceptional Children appointed Professor J. J. Gallagher of the Institute for Research on Exceptional Children chairman of a committee to recommend minimum standards for advanced graduate training.

The committee's recommendations for admission requirements, program structure, and skill requirements have been discussed by Gallagher (1959).

The research that has been conducted over the past ten years under the auspices of the Institute for Research on Exceptional Children will be described briefly in the pages that follow. In the list of references at the close of this chapter will be found the titles of articles by S. A. Kirk (1954, 1955a, 1955b) and L. M. Stolurow (1958, 1961) discussing the Institute and summarizing some of the areas of research.

## References

---

- GALLAGHER, J. J. "Advanced graduate training in special education." *Except. Child.*, 1959, 26: 104-9.
- KIRK, S. A., AND SPALDING, W. B. "The Institute for Research on Exceptional Children at the University of Illinois." *Educ. Forum*, 1953, 413-22.
- KIRK, S. A. "Research on the mentally retarded." In *Proceed. Inst. Ment. Def.*, Nashville, Tennessee: Department of Mental Health, 1954; pp. 42-53.
- . "Research on the education of the mentally retarded." *Slow Learn. Child*, 1955, 1: 96-102. (a)
- . "The retarded child in home and school." In *Proceed. Fourth Annual Conf. Crippled Child*. Richmond, Virginia: Virginia Council on Health and Medical Care, 1955; pp. 41-50. (b)
- . "A doctor's degree program in special education." *Except. Child.*, 1957, 24: 50-52, 55.
- STOLUROW, L. M., "The Institute for Research on Exceptional Children." *Except. Child.*, 1958, 24: 429-34.
- . "Research on mental deficiency at the Institute for Research on Exceptional Children, University of Illinois." *Train. Sch. Bull.*, 1961, 58: 61-73.



## Prevalence Studies

---

Adequate planning of special education programs and facilities is largely dependent on some knowledge of the size and nature of the population of exceptional children to be served. Obtaining accurate statistics on prevalence of exceptionality is, however, complicated by the fact that the data gathered are a function of at least three factors: (a) the criteria or definition used for each category of exceptionality; (b) the method used in surveying or estimating the sample or population being examined; and (c) the geographic and socio-economic status of the area being studied.

### **CRITERION STUDIES**

In a critique of the 1953 Onondaga, New York, study of the presumed prevalence of mental retardation, Kirk and Weiner (1959) point out that the obtained results had been distorted by (a) the use of an over-inclusive definition of retardation which encompassed poor academic performance and social maladaptation, as well as "suspected" retardation, and (b) nomination procedures which resulted in producing a survey of "referred educational retardation" rather than mental retardation.

The Onondaga study reported the over-all suspected prevalence of mental retardation among those under eighteen years of age as 3.52 per cent. Less than .5 per cent were reported below five years of age, 2.2 per cent at age five, 4.0 per cent at age six, with a steady increase reaching a maximum of 8.0 per cent in the ten- to fifteen-year age groups. A decline to 2.8 per cent was found for the sixteen- and seventeen-year-old groups.

In contrast, a similar survey conducted in Hawaii by Weiner (1958), differentiating between mental and educational retardation, yielded an over-all prevalence rate of 2.36 per cent and did not find the skyrocketing rate of "mental retardation" in the school years. Table 1 shows the rates obtained in Weiner's Hawaiian study, compared with

TABLE 1.

<i>Grade</i>	Weiner <sup>1</sup>	Onondaga
k	.6	2.2
1	2.0	4.0
2	1.6	[ rising steadily
3	2.4	
4	2.5	
5	3.1	
6	2.7	[ 8.0
7	2.3	
8	2.7	
9	2.5	
10	2.3	[ 2.8
11	2.2	
12	.5	

<sup>1</sup> Weiner (1958, p. 47).

percentages obtained in the Onondaga study, with the reported percentages of retarded children presented by grade level.

#### ILLINOIS STATE PREVALENCE STUDY

In 1957 the Illinois General Assembly passed legislation requiring an annual census of exceptional children. In November, 1958, school districts, private schools, and community agencies cooperated in the enumeration procedures developed by a committee headed by the Director of the Division for Exceptional Children, State Office of Public Instruction. The census data obtained were analyzed and a report was prepared by Farber (1959) of the Institute for Research on Exceptional Children. Table 2 presents the summary data from this study. With minor exceptions, the prevalences of exceptionality fell within the range predicted from theoretical formulations and other studies. The percentage of children in each category of exceptionality who received special education services ranged from a high of almost 50 per cent of speech handicapped children to a low of 10 per cent of slow learners. In most categories of exceptionality 20 to 25 per cent of the children were receiving special services. The census data suggested some provocative questions concerning relations between prevalence of exceptionality and community size and age of the children.

#### PREVALENCE OF TRAINABLE CHILDREN

In 1953 Illinois State legislation was enacted which permitted the Department of Public Instruction to set up a two-year experimental

TABLE 2.

Exceptionality	Per Cent Children Ages 6-15	Per Cent with Exceptionality Receiving Services
Physical handicap	.67	25.8
Speech	3.66	48.6
Hearing impairment	.46	21.8
Vision handicap	1.00	24.4
Socially maladjusted or emotionally disturbed	2.42	20.6
Trainable mentally handicapped	.27	19.7
Educable mentally handicapped	1.61	29.2
Slow learner	7.92	10.1
Gifted	3.48	23.1

study project (Superintendent of Public Instruction, 1954) for trainable mentally handicapped children (TMH). As part of this study, data were obtained from five communities which had classes for the trainable for the purpose of determining the percentage of trainable children in the total school population. On the basis of the data it was deduced that there were an estimated 1.49 TMH per 1,000 school-age children living in the local communities and .85 per 1,000 in institutions, yielding a total estimate of 2.34 TMH per 1,000 school-age children in Illinois.

In his survey of school provisions for TMH children, Kirk (1957) reviewed the Illinois study reported above and compared it to the Michigan survey (1955) which reported a mean of 3.4 TMH per 1,000 school-age children: "If one were to generalize from these studies . . . for each 1,000 school-aged child population there appears to be one or two severely retarded children in the community and an additional one child in institutions." In Kirk's survey a study was made of nine towns and cities in areas which had public school classes for trainable mentally handicapped children. The number of TMH children per 1,000 school population in classes ranged from .6 to 2.0, with a mean of 1.01, while the total number of TMH per 1,000 ranged from 1.0 to 2.7 with a mean of 1.4.

In his summary of these prevalence studies Kirk points out that the number of children enrolled in community classes depended on: (a) the adequacy and ability of institutions to accommodate severely retarded children; (b) the lower limits of eligibility; (c) the existence of adequate programs for the educable mentally retarded; and (d) the problem of transportation.

## References

---

- FARBER, B. *The prevalence of exceptional children in Illinois in 1958*. Springfield, Illinois: Superintendent of Public Instruction, 1959.
- KIRK, S. A. *Public school provisions for severely retarded children*. Albany, New York: Interdepartmental Health Resources Board, 1957.
- KIRK, S. A., AND WEINER, BLUMA B. "The Onondaga census — fact or artifact." *Except. Child.*, 1959, 25: 226–28, 230–31.
- STATE DEPARTMENT OF PUBLIC INSTRUCTION. *Interim report of the Michigan demonstration research project for the severely mentally retarded*. Lansing, Michigan: State Department of Public Instruction, 1955.
- SUPERINTENDENT OF PUBLIC INSTRUCTION. *Report on study projects for trainable mentally handicapped children*. Springfield, Illinois: Superintendent of Public Instruction, 1954.
- WEINER, BLUMA B. "Hawaii's public school program for mentally retarded children." Unpublished doctoral dissertation, University of Illinois, 1958.

# The Development of Diagnostic Instruments

---

Several of the studies conducted at the Institute for Research on Exceptional Children required the development of their own assessment instruments in view of the lack of available tests appropriate for the particular task. Some of these newly developed instruments are mentioned in later reviews of the studies themselves, so only the major ones are included here.

## THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES (ITPA)

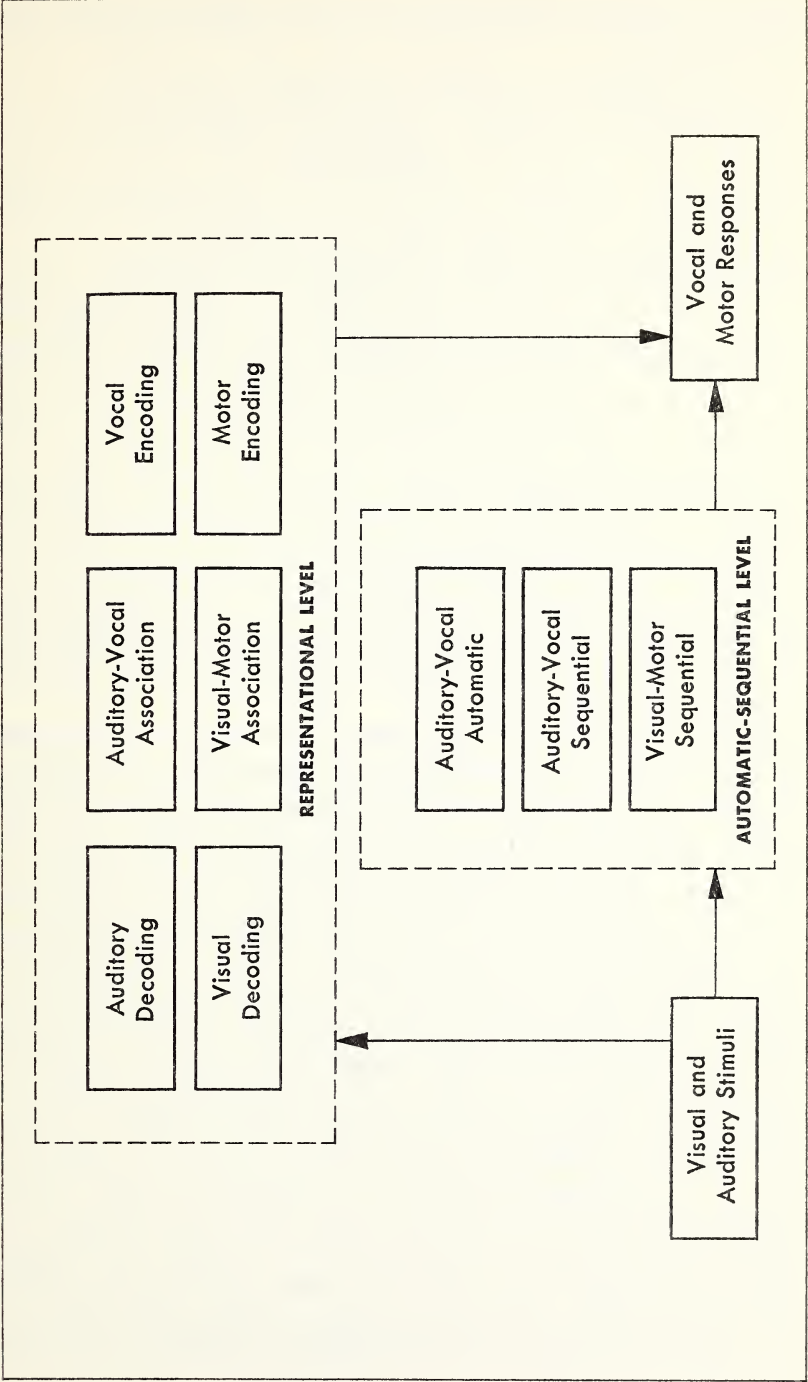
An area of increasing interest to special educators and psychologists is that of precise diagnosis and training or remediation of learning deficits in children. For several years the personnel of the Institute for Research on Exceptional Children have been working in the field of psycholinguistic diagnosis and remediation. The precise assessment of the total language processes of young handicapped children is a difficult task, but a necessary prerequisite to planning appropriate educational or remedial programs.

The Illinois Test of Psycholinguistic Abilities (1961) has been developed as a diagnostic approach to psycholinguistic functioning. The first task in developing a test which could provide a diagnosis leading to remedial planning was to formulate a theoretical structure of language upon which a differential approach to specific psycholinguistic disabilities could be based.

The model (Kirk and McCarthy, 1961, p. 402) which forms the basis for the present Illinois Test of Psycholinguistic Abilities was derived from the theoretical formulations of Osgood. This model, shown in Figure 1, presents three dimensions of language: (a) the channel utilized in communication — auditory-vocal or visual-motor; (b) the level of organization (meaning) — representational or automatic-sequential; and (c) the process — decoding (understanding), association (making relationships), or encoding (expressing). Each of



FIGURE 1. A MODEL OF THE COMMUNICATION PROCESS



the nine subtests measures a specific, discrete language function briefly described below:

1. Auditory Decoding — the ability to understand what is heard.
2. Visual Decoding — the ability to understand what is seen.
3. Auditory-Vocal Association — the ability to educe relationships from what is heard.
4. Visual-Motor Association — the ability to educe relationships from what is seen.
5. Vocal Encoding — the ability to express ideas verbally.
6. Motor Encoding — the ability to express ideas by motor means.
7. Auditory-Vocal Automatic — the ability to use the structure of language automatically.
8. Auditory-Vocal Sequential — the ability to reproduce a series of symbols presented auditorily.
9. Visual-Motor Sequential — the ability to reproduce a series of symbols presented visually.

Three major test revisions were required to produce these nine subtests which meet the following requirements: (1) suitable to administer to young children in one session (current norms range from age two to nine); (2) measuring only one psycholinguistic area at a time; (3) possessing statistical reliability and construct validity. The test in its present form was standardized on 700 normal children, ages two and one-half to nine. Language age and standard score norms are available in the test manual.

At the conclusion of this first stage of the research, revolving about the theory, construction, revision, and standardization of the ITPA (Sievers, 1955; Gallagher, 1957; McCarthy, 1957; Kirk and McCarthy, 1958; 1960, 1961), a series of construct validity studies was begun. Three recent studies using the ITPA have demonstrated its usefulness and validity as a differential diagnostic test, and have also pointed out its limitations. Olson (1960) found that the test differentiates children who are deaf or sensory aphasic. Those diagnosed as evidencing expressive aphasia had heterogeneous profiles. Bateman's (1963) study established the usefulness of this test with children who have severe visual defects, short of legal blindness, and thus suggested that the test measures primarily central psychological processes which appear to be relatively independent of sensory processes or acuity. A study by Kass (1962) found that children with normal intelligence, but with severe learning disabilities in the area of reading, showed deficits in the automatic-sequential level while they performed normally on the tests at the representational or meaning level. That is, their comprehension and association abilities to deal meaningfully with language were not deficient, but their performance on the automatic aspects of language usage was inferior. In addition to providing



new, useful knowledge about some psychological correlates of severe reading disabilities, Kass's study also pointed up the desirability of expanding the ITPA to include more tests at the automatic usage level.

The present phase of the research involves a determination of whether children who show significant deficits in some areas of psycholinguistic functions can improve in these functions if special training on their deficits is offered (Kirk and Bateman, 1962; Kirk, Kass, and Bateman, 1962). Currently a case-study method is used (a) to make a study of the child, (b) to determine whether the child has a specific learning disability in the psycholinguistic area, (c) to organize a tutorial remedial program for the purpose of ameliorating his deficits, and (d) to re-examine the child with psychometric tests and with the ITPA. Through a series of such case studies, using the child as his own contrast, the investigators hope to define more clearly the patterns of disabilities found in children, to correlate these clinical disabilities with other characteristics, and to determine the extent and the rate at which one can help to ameliorate these deficits.

It is hoped that this approach to assessment and remediation of specific disabilities, going beyond the classification or categorization of children with intellectual deficits, will take us a step closer to achieving a scientific pedagogy.

#### **TEST OF BASIC INFORMATION (TOBI)**

One of the hypotheses formulated in the study of the efficacy of special class placement of retarded children (Goldstein, Jordan, Moss, 1962) (*see* "Effects of Training the Mentally Retarded," page 27) was that the special-class children would gain a larger fund of basic, general information about the world around them than would the control retardates in the regular grades. Since no suitable instrument was available to test this hypothesis, the Test of Basic Information (TOBI) was constructed (Moss, 1962). The TOBI was originally designed to assess the experiential background of the child and later was found also to provide an index of readiness for reading. The test is made up of forty four-alternative items. The administrator reads each item and the child responds by marking the appropriate picture, e.g., "Mark the picture of the room we wash dishes in." (Stimulus pictures of bathroom, bedroom, kitchen, and living room.)

Tentative percentile norms are available for kindergarten and first-grade children, based on Ns of 84 and 46. More complete norms will be available soon, as the test is an easily administered group instrument. The only reliability measure as yet available is a test-retest (one year interval) coefficient of .70, obtained for forty-nine

mentally retarded and slow learning children. Construct and predictive validity coefficients range from .43 to .76 (correlations of the TOBI with the Metropolitan Reading Readiness Test, Arithmetic Achievement, Reading Achievement, Binet, MA, etc.), based on a homogeneous group of children.

#### ANALYSIS OF CLASSROOM VERBAL INTERACTION

The investigation of Gallagher and Aschner (in press) of the productive thinking of gifted children (*see* "Gifted Children," page 44) entails the intensive analysis of teacher-pupil and pupil-pupil verbal interaction in the classroom. Prerequisites to this analysis include (a) a system for classifying verbal behavior, and (b) a theoretical structure which provides a basis for evaluating the effectiveness of teacher behaviors.

The Aschner-Gallagher classification system (Aschner, Gallagher, Perry, Afsar, Jenné, and Farr, 1962) is constructed primarily on the basis of the operations of intellect as described by Guilford (1956). Five sets of categories are employed: (a) *cognitive memory* operations — reproduction of facts, formulae, or other items of remembered content through use of such processes as recognition, rote memory, and selective recall without necessity for integration or evaluation of ideas; subdivisions include fact-stating, detailing or reporting, elaborating, clarification, review recounting, repetition, and quoting; (b) *convergent thinking* operations — analysis and integration of given or remembered data leading to one expected, correct answer or result because of the tightly structured logical framework which limits it; subdivisions include translation, association, rational, value or narrative explanation, generalization, summary or logical conclusion; (c) *divergent thinking* — individual is free to generate independently his own data within a data-poor situation or to take a new direction or perspective on a given topic; subdivisions include elaboration, divergent association, implications and synthesis; (d) *evaluative operations* — deal with matters of value rather than fact and are characterized by judgments; subdivisions include unstructured rating or judgment, structured probability or choice, and qualified or counter judgment; (e) *routine* — includes classroom management, structuring, verdict, agreement, self reference, dunno, muddled, and humor.

Other instruments developed or selected for use on this project include: (a) in-class written assignments, (b) tests of ideational fluency, spontaneous flexibility, sensitivity to problems, critical evalua-

tion, and inference (adapted from Guilford's battery), (c) Quincy semantic differential, and (d) sentence completion test adapted from the Rhode-Hildreth Sentence Completion Test for children.

## References

---

- ASCHNER, MARY JANE; GALLAGHER, J. J.; PERRY, JOYCE M.; AFSAR, SIBEL S.; JENNÉ, W. C.; AND FARR, HELEN L. K. "A system for classifying thought processes in the context of classroom verbal interaction." Unpublished dittoed manuscript, University of Illinois, Institute for Research on Exceptional Children, 1962.
- BATEMAN, BARBARA D., "Reading and psycholinguistic processes of partially seeing children." *Counc. Except. Child. Res. Monogr. Series*, 1, No. 5, 1963.
- GALLAGHER, J. J. "A comparison of brain-injured and non-brain-injured mentally retarded children on several psychological variables." *Monogr. Soc. Res. Child. Develpm.*, 1957, 22.
- GALLAGHER, J. J., AND ASCHNER, MAY JANE. "A preliminary report on analyses of classroom interaction." *Merrill-Palmer Quarterly*, in press.
- GOLDSTEIN, H.; JORDAN, LAURA J.; AND MOSS, J. W. *Early school development of low IQ children: a study of special class placement*. United States Department of Health, Education and Welfare, Sae 8204, HEW 619, Interim Report, July 1959-June 1961. Urbana, Illinois: Institute for Research on Exceptional Children, University of Illinois, 1962.
- Illinois Test of Psycholinguistic Abilities*. University of Illinois Press, University of Illinois, Urbana, Illinois: 1961.
- KASS, CORRINE E. "Some psychological correlates of severe reading disability (dyslexia)." Unpublished doctoral dissertation, University of Illinois, 1962.
- KIRK, S. A., AND BATEMAN, BARBARA D. "Diagnosis and remediation of learning disabilities." *Except. Child.*, 1962, 29: 73-78.
- KIRK, S. A., KASS, CORRINE E., AND BATEMAN, BARBARA D. *The educability of psycholinguistic functions in retarded children*. Illinois State Department of Mental Health, Project 1766, Progress Report, July 1961-March 1962. Urbana, Illinois: Institute for Research on Exceptional Children, University of Illinois, 1962.
- KIRK, S. A., AND MCCARTHY, J. J. *A study of the language process of pre-school cerebral palsied children*. United Cerebral Palsy Research Grant, Progress Report, September 1954-February 1958. Urbana,

Illinois: Institute for Research on Exceptional Children, University of Illinois, 1958.

KIRK, S. A., AND MCCARTHY, J. J. *Development of differential language ability test for young children with central nervous system involvement*. United Cerebral Palsy Research Grant, Progress Report, September 1958-June 1960. Urbana, Illinois: Institute for Research on Exception Children, University of Illinois, 1960.

———. "The Illinois Test of Psycholinguistic Abilities — an approach to differential diagnosis." *Amer. J. Ment. Def.*, 1961, 66: 399-412.

MCCARTHY, J. J. "Qualitative and quantitative differences in the language abilities of young cerebral palsied children." Unpublished doctoral dissertation, University of Illinois, 1957.

MOSS, J. W. "Test of Basic Information." Urbana, Illinois: Institute for Research on Exceptional Children, University of Illinois, 1962.

OLSON, J. L. "A comparison of sensory aphasic, expressive aphasic, and deaf children on the Illinois Test of Language Ability." Unpublished doctoral dissertation, University of Illinois, 1960.

SIEVERS, DOROTHY J. "Development and standardization of a test of psycholinguistic growth in preschool children." Unpublished doctoral dissertation, University of Illinois, 1955.



# Characteristics of the Mentally Retarded

---

Effective program planning for the mentally retarded in schools, institutions, or the social-vocational community at large must be based on accurate and specific knowledge of the relevant characteristics of the mentally retarded. For this reason several studies of these characteristics, with special emphasis on those areas related to learning, have been undertaken at the Institute for Research on Exceptional Children. Goldstein (1959a) and Kirk and Kolstoe (1953) have summarized findings on the characteristics of the retarded.

## **PSYCHOLOGICAL CHARACTERISTICS OF BRAIN-INJURED MENTALLY RETARDED CHILDREN**

Twenty-four of the brain-injured mentally retarded children included in Gallagher's (1960) tutoring project, described on pages 30 to 31, were matched with twenty-four familial mentally retarded children, all at Dixon State School, and a number of psychological characteristics of the two groups were compared (Gallagher, 1957). In recent years the attempts to provide differential educational curricula for brain-injured and non-brain-injured retarded children have made thorough and accurate knowledge of any differentiating characteristics imperative.

The brain-injured and familial mentally retarded children were compared on intellectual aptitude and intellectual trait scatter; language, perceptual, and quantitative abilities; and personality measures.

Results on the perceptual measures showed only a slight trend for the brain injured to make more reversals and to have more difficulty producing marble board designs. Generally, most of the brain injured performed adequately on perceptual tasks while only a minority clearly showed perceptual disturbances. No differences were found between the incidental learning or quantitative abilities of the two groups. There was no difference in the general level of language development in the two groups, but the brain injured were superior in verbal imi-

tation and good speech production and were inferior in making associations, integrating verbal concepts, and in visual-motor perceptual ability.

The patterns of Binet performance were not different for the two groups. A factor analysis of the data revealed that a factor of general mental development accounted for a high amount of variance in both groups, and that only a fourth as much variance was related to a perceptual disturbance factor in the brain-injured group and language development factor in the familial group.

On the personality rating scales the brain injured were found to be hyperactive, lacking attention, fearful, uninhibited, and less popular than the familial retarded group.

Gallagher points out that while the two groups do differ significantly from each other in some characteristics, there were many characteristics, perhaps more important for educational planning, in which the groups did not differ. The educational importance of the personality differences, especially the tendency of some brain-injured children to be disinhibited and distractible, and the desirability of a behavioral (rather than neurological) approach to those perceptual difficulties shown by some brain-injured children are discussed.

Educational methods appropriate for use with brain-damaged children are discussed and specified by Gallagher (1962) in the context of potential disruptions in the learning process caused by cerebral dysfunction. Disruptions can occur in these areas: sensory, set (attentional or motivational), decoding, integration, encoding, or feedback. The area of disturbance determines the kind of modification of educational procedure which is desirable.

#### **ARITHMETIC ABILITIES OF RETARDED CHILDREN**

Capobianco's (1954) comparison of the arithmetic performances of thirty-five endogenous and twenty-nine exogenous retarded boys (MA's six to twelve years) on a battery of arithmetic tests revealed no quantitative or qualitative differences between the groups. Mental age was found more important than etiology in qualitative functions such as rigidity, reversals, and concept of zero. When both mentally retarded groups were compared to normative test populations they were found to possess fewer faulty computational habits than average, suggesting that perhaps the primitive and faulty arithmetic concepts attributed to the educable mentally handicapped in the literature may be the result of teaching methods, degree of handicap, or poor experimental design.

#### **READING ABILITIES OF BRAIN-INJURED CHILDREN**

In a comparison of the reading of matched pairs of brain-injured and non-brain-injured average and retarded children, Frey (1961) found that the brain-injured who had been in special classes for brain-injured children read significantly better than the non-brain-injured in ordinary special classes or regular grades. A perhaps highly plausible explanation for this finding was the specialized program offered the brain-injured group.

#### **READING ABILITIES OF EMH CHILDREN**

Dunn (1953) investigated the reading achievement of educable mentally handicapped boys. His comparison of the reading processes of twenty retarded with thirty normal boys of the same mental ages revealed that the normal group performed significantly better than the retarded on all measures of silent and oral reading, including use of context clues. There were no differences in sound-blending ability or eye movements. The retarded boys had more auditory, visual, social, and emotional problems than did the normals, but did not differ on handedness, eyedness, or mixed lateral dominance measures. The retarded group scored below their mental ages on measures of reading capacity, arithmetic reasoning, silent and oral reading, and spelling ability.

#### **GROWTH PATTERNS OF MONGOLOID CHILDREN**

McNeill (1954) surveyed mongoloids in the community and in institutions and obtained a chart of patterns of development based on a series of physical, mental, and other measurements. Probably as a result of selection factors, the mongoloid children living at home were found to be superior to those in institutions on both mental and physical traits. As a group the mongols were below average in height and eye-hand coordination. Mental growth showed a drop below other areas and social maturity was a little higher than mental development. Language functions were among the lowest of mongoloids' abilities.

#### **VOCATIONAL INTERESTS OF RETARDED CHILDREN**

Erdman (1957) investigated the vocational choices of adolescent mentally retarded boys and found that only one-third of the boys made unrealistic (skilled job level) choices. The home and community were found to exert a greater influence on the choices than did the school, which perhaps suggests a need for more adequate development and evaluation of school's vocational curricula for the retarded.



## **INCIDENTAL LEARNING OF THE MENTALLY RETARDED**

Goldstein and Kass (1961) investigated the problems of whether educable mentally retarded children acquire learning incidentally in the classroom. If so, how accurate is that learning? Twenty-one educable mentally retarded children in special classes were compared with twenty-one gifted nursery school children with the same mental ages. Both groups were presented with a directed learning task (finding certain objects in a picture) and were then tested on three incidental learnings that might have taken place — identification, naming, and detailing of objects in the picture other than those to which the learning task was directed. There were no differences between the retarded and gifted in the identification or naming tasks, but the retarded gave significantly more total details and more incorrect details than the gifted. Implications drawn from this study are that teachers of the educable mentally handicapped can assume these children have the potential for incidental learning, but at the level of complex tasks the teacher must assist them in making associations between objects, their characteristics, and functions, if inaccuracies of recall are to be reduced. The teaching of facts and concepts related to objects, people, and conditions is preferred to teaching just names and places.

## **SOCIAL POSITION OF THE MENTALLY RETARDED**

Goldstein (1957) summarized our knowledge of the social aspects of mental deficiency in American society. He described the mentally deficient as a distinct segment in society, discussed trends in social control and treatment, and proposed alternatives to current practices. Further, he reviewed literature from social welfare, medico-psychological treatment, education, law, anthropology, and government reports. A "status" concept is proposed in which mental deficiency is viewed as a *status* assigned to persons unable to fulfill their social roles adequately due to mental subnormality. The rights, privileges, relevant institutions, and so forth, of this status vary with the society. This status concept opens the way for an interdisciplinary approach to the problems of mental deficiency.

Two studies at the Institute for Research on Exceptional Children have employed sociometric techniques to assess the social status of retarded children. Studies by Johnson (1950) and Johnson and Kirk (1950) on elementary school children revealed that on the basis of sociometric choices the retarded were not only less well accepted than the mentally normal children, but were also more frequently rejected. Rejection was negatively correlated, and acceptance positively correlated, with four IQ ratings — low educable mentally handicapped, high

educable mentally handicapped, borderline, and average. Interestingly, the retarded were rejected because of unacceptable behavior, not because of low academic ability per se. And yet, intelligence, not age or socio-economic status, accounted for the social position of the retarded.

Jordan (1960) conducted a related study of the sociometric status of educable mentally handicapped children in special classes for the retarded rather than in regular grades. She found the children in the lowest IQ quartile had significantly lower total social status scores than did the children in the higher IQ quartiles. The degree of accuracy with which the children predicted who would choose them did not differ among the intelligence levels. The over-all status findings confirmed Johnson's results — the children lowest in IQ occupy low social positions.

#### **INSTITUTIONAL STUDIES**

Many mentally retarded children spend all or part of their lives in residential institutions. The management of these institutions thus becomes an area of research interest for those concerned with the care, education, and habilitation of the mentally retarded. Several studies of factors affecting the planning and operation of institutional programs for retarded are discussed in this section.

Goldstein (1959b) analyzed data from the U.S. Census Bureau (1904–1952) and from related studies on admissions to institutions for the mentally defective. He found that first admissions are now including fewer of the educable group and more of the custodial group. He also found that the trend is also to admit younger and older custodial persons, leading him to suggest that the institutions will become more predominantly custodial rather than rehabilitative. Implications are presented for future planning and administration of these institutions as their societal role changes.

In an analysis of the school-aged educable mentally handicapped admitted to Illinois state schools from 1947 through 1956, Henderson (1957) found: (a) the admission ratio of boys to girls was almost two to one; (b) the institution population had a lower distribution of IQ's (most in the 50–64 range) than was found in public school classes for the educable mentally handicapped (most in the 65–74 range); (c) the major reasons for commitment, in addition to mental retardation, were dependency (40 per cent) and delinquency (30 per cent); (d) the availability of public school classes for retarded decreases the commitment rate from that community; (e) the greater the importance of agriculture in a community, the less likelihood that there

will be classes for the educable handicapped in the community's public schools.

The feasibility and potential effectiveness of role playing as part of the training of psychiatric aides in a residential institution for the mentally retarded was shown by Stolurow and Jansen (1961). They found that imitating or improvising the aide's own role was more effective than taking many roles, and that imitating was more effective than improvising for one or many roles.

In a study of the determinants of social status in a ward of eighty institutionalized mentally retarded boys, Marden and Farber (1961) investigated the role of eleven variables (e.g., work status, attendance at occupational therapy classes, school attendance, intelligence, etc.). A partial regression analysis indicated that high-brow and low-grade status were determined primarily by work status, intelligence, and attendance at occupational therapy classes. Interviews with the boys showed that the most important dimensions they used for differentiating high-brows from low-grades were hygiene, rehabilitation, and intelligence.

## References

---

- CAPOBIANCO, R. J. "A comparative study of endogenous and exogenous mentally handicapped boys on arithmetic achievement." Unpublished doctoral dissertation, University of Illinois, 1954.
- DUNN, L. M. C. "A comparative study of mentally retarded and mentally normal boys of the same mental age on some aspects of the reading process." Unpublished doctoral dissertation, University of Illinois, 1953.
- ERDMAN, R. L. "Vocational choices of adolescent mentally retarded boys." Unpublished doctoral dissertation, University of Illinois, 1957.
- FREY, R. M. "Reading behavior of public school brain-injured and non-brain-injured children of average and retarded mental development." Unpublished doctoral dissertation, University of Illinois, 1961.
- GALLAGHER, J. J. "A comparison of brain-injured and non-brain-injured mentally retarded children on several psychological variables." *Monogr. Soc. Res. Child Developm.*, 1957, 22.
- . *The tutoring of brain-injured mentally retarded children — an experimental study.* Springfield, Illinois: Charles C. Thomas, 1960.

- GALLAGHER, J. J. "Educational methods with brain-damaged children." In *Current Psychiatric Therapies*, Vol. II, edited by J. Masserman. New York: Grune and Stratton, 1962; pp. 48-55.
- GOLDSTEIN, H. "Social aspects of mental deficiency." Unpublished doctoral dissertation, University of Illinois, 1957.
- . "Characteristics of educable mentally handicapped children." *Johnstone Bull.*, 1959, 1: 16-28. (a)
- . "Population trends in U.S. public institutions for the mentally deficient." *Amer. J. Ment. Def.*, 1959, 63: 599-604. (b)
- GOLDSTEIN, H., AND KASS, CORRINE E. "Incidental learning of educable mentally retarded and gifted children." *Amer. J. Ment. Def.*, 1961, 66: 245-49.
- HENDERSON, R. A. "Factors in commitment of educable mentally handicapped to Illinois state schools." Unpublished doctoral dissertation, University of Illinois, 1957.
- JOHNSON, G. O. "A study of the social position of mentally handicapped children in regular grades." Unpublished doctoral dissertation, University of Illinois, 1950.
- JOHNSON, G. O., AND KIRK, S. A. "Are mentally handicapped children segregated in the regular grades?" *J. Except. Child.*, 1950, 17: 65-68.
- JORDAN, JUNE B. "Intelligence as a factor in social position — a sociometric study in special classes for the mentally handicapped." Unpublished doctoral dissertation, University of Illinois, 1960.
- KIRK, S. A., AND KOLSTOE, O. P. "The mentally retarded." *Rev. Educ. Res.*, 1953, 23: 400-16.
- MCNEILL, W. D. D. "Developmental patterns of mongoloid children: A study of certain aspects of their growth and development." Unpublished doctoral dissertation, University of Illinois, 1954.
- MARDEN, P. W., AND FARBER, B. "High-brow versus low-grade status among institutionalized mentally retarded boys." *Soc. Prob.*, 1961, 8: 300-12.
- JANSEN, MATHILDA J., AND STOLUROW, L. M. "An experimental study of role playing." *Psychological Monogr.* No. 550, 1962, Vol. 76, No. 31. Also, unpublished mimeographed manuscript. Urbana, Illinois: Institute for Research on Exceptional Children, University of Illinois, 1961.



## School Programs for the Mentally Retarded

---

The problems of planning, executing, and evaluating programs for the full habilitation of the mentally retarded loom large, and to a great extent are as yet unmet.

In 1957, the governor of Illinois appointed a commission to study the statewide needs of the mentally retarded and to make recommendations for alleviating these needs. The Institute for Research on Exceptional Children was one of the cooperating agencies which prepared the report to the governor (*Report of the commission on mental retardation*, 1958). The findings of the commission were as follows: (a) state institutions for the mentally defective evidenced overcrowding, staff shortages, and inadequate rehabilitation programs; (b) no school district had provisions for all of the retarded in its district; (c) teacher and classroom shortages were causing program delays; (d) 62 of the 102 counties had no classes for the educable mentally retarded, and 97 counties had no classes for the trainable mentally retarded; (e) only 25 per cent of the educable mentally retarded and 7 per cent of the trainable mentally retarded currently were provided with public school programs; (f) Illinois ranked fortieth in per capita expenditure for the retarded; (g) no day care centers existed except those that were parent sponsored; (h) no diagnostic and counseling services were provided; (i) sheltered workshops were rare; (j) only 1 per cent of the mentally retarded received vocational training and placement; and (k) support and staff for research in mental retardation were inadequate. Specific recommendations were made to remedy these inadequacies in Illinois.

This section deals primarily with research related to school provisions for educable and trainable mentally retarded children.

### **PROGRAMS FOR TRAINABLE MENTALLY HANDICAPPED**

The decade after World War II saw societal changes which resulted in proliferation of community and school provisions for trainable



children. In 1957 a survey of public school provisions for severely retarded children and an evaluation of existing legislation, policies, and practices was prepared by Kirk (1957). The study utilized information from the literature, legislative acts and state regulations, research projects, and observation in many classes and programs in various parts of the country. Topics covered included definitions, prevalence, eligibility practices, class organization, costs, teacher qualifications, curriculum, evaluation of programs, and preschool and sheltered workshop programs.

The first Illinois legislation providing public school facilities for the trainable mentally handicapped was passed in 1953. One of the provisions of this law was that the study projects so established would be the subject of extensive and comprehensive research. Twenty-two classes for the trainable mentally handicapped enrolling 173 children were established in twelve school districts. The Institute for Research on Exceptional Children designed and conducted the required research in cooperation with the State Department of Public Instruction (Superintendent of Public Instruction, 1954; Goldstein, 1956a). The research goals included: (a) determining acceptable administrative procedures and education standards for classes of trainable mentally handicapped children, (b) finding appropriate eligibility criteria for these classes, and (c) evaluating results of such training programs.

The findings of the first year (Superintendent of Public Instruction, 1954) of the two-year study included:

1. The prevalence of trainable mentally handicapped in Illinois was estimated to be between two and three per 1,000 school age children.
2. The majority of school administrators favored community provisions for trainable mentally handicapped, either under public school or welfare auspices.
3. An evaluation of the benefits of the classes showed slight but inconclusive acceleration of mental growth and no basic personality changes in the trainable mentally handicapped group as a whole.
4. Parents appeared to gain a more realistic view of the children's capabilities in some areas, but needed continuing help.

The second year of the study (Goldstein, 1956a) revealed that:

1. Children's rate of mental development returned to the original rate and did not increase as it had done the first year.
2. Behavioral progress on the children's part was seen by the teachers during the first but not after the second year of the study project — an appraisal exactly reversed by the parents, who saw some improve-

ment only during the second year — a finding perhaps related to the expectations and enthusiasms of the raters.

3. Ten children were transferred from the classes for trainable to the classes for educable children. These ten tended to be at the higher levels of the trainable and showed acceleration in rate of mental development.

4. Twenty-two of the 173 children were excluded from the classes during the two-year period. These tended to be among the older children and with initial IQ's below 25 on the Kuhlmann test.

5. Parents became more realistic about the potentialities of their children.

Tisdall (1960) followed up 126 trainable mentally handicapped children five years after they had enrolled in the public school classes under the projects cited above. He found that (a) 25 per cent of the children had left or graduated from the classes and were living at home without formal training, (b) 24 per cent of the sample were still in the public school special classes, (c) 18 per cent were enrolled in parent-sponsored classes for older children, (d) 12 per cent were in institutions, (e) 7 per cent were in sheltered workshops, and (f) the rest had moved from the community (7 per cent), had been transferred to classes for the educable mentally handicapped (4 per cent), or were deceased. Other findings of this study revealed that delinquency among this group was a minor factor (only two children committed minor offenses), and only three were working in the community, with or without remuneration.

The problem of finding criteria to differentiate between trainable mentally handicapped children who would show evidence of benefitting from a program and those who would not benefit was investigated (Goldstein, 1956b). The following assumptions were found justifiable in establishing eligibility criteria: (a) a Kuhlmann IQ below 25 warrants ineligibility since 94 per cent of the children who had Kuhlmann IQ's below 25 were eventually excluded from the programs as they appeared unable to benefit from the training offered; (b) when the Kuhlmann IQ is between 25 and 35, other criteria — mental age above two years, social age above three years, and a social quotient above 35 — should be considered for eligibility; (c) a Kuhlmann IQ above 35 suggests a high probability of successful placement in a class for trainable mentally handicapped children.

During the initial planning of this two-year study project for trainable mentally handicapped children, the teachers of the trainable children expressed an urgent need for a curriculum guide. The development of the curriculum guide was undertaken by the teachers,

the consultant from the State Office of Public Instruction, and the Institute for Research on Exceptional Children (Baumgartner, 1955).

The guide discusses definitions of trainable mentally handicapped children, describes their characteristics relevant to a school program, discusses why school programs should be established and how the school program can be carried out to realize the objectives of training in the areas of self-care, social adjustment, and economic usefulness in homes or sheltered environments. Properly selected and taught activities in physical training, language development, music, and arts and crafts are presented in a detailed, organized schema aimed toward developing a well-adjusted personality which can function in a necessarily limited environment.

#### **PROGRAMS FOR EDUCABLE MENTALLY HANDICAPPED**

During the initial development and expansion of public school provisions for educable mentally handicapped children in Illinois, much attention was devoted to administrative considerations and the operational problems inherent in expanding services. However, after a large number of individual classes in separate communities were established, a need was felt for a systematized, cohesive guide for educational classroom planning. As a direct result of this need, a curriculum guide for teachers of educable mentally handicapped classes was prepared in a three-year cooperative project conducted by the Institute and the Division of Education for Exceptional Children, Office of Public Instruction. In this guide, Goldstein and Seigle (1958) have defined ten life functions: citizenship, communication, home and family, leisure time, money and materials, occupation, physical and mental health, safety, social adjustment, and travel. The behaviors and skills needed for proficiency in each of these areas are presented in seven academic areas of learning. The guide also presents a sequential and developmental succession of these learnings and a summary of the characteristics of educable mentally handicapped children relevant to educational planning.

Research on the efficacy of special class placement is discussed in "Effects of Training the Mentally Retarded," on pages 28 to 30.

Weiner (1958) surveyed the needs of Hawaii in respect to the development of a comprehensive program of public school services for mentally retarded children and suggested means to meet these needs. In addition, she investigated influences operating on the early efforts to provide for retarded children. Additional procedures employed were: (a) a survey of special educational and pupil guidance needs in the public schools, (b) field visits and conferences with school personnel,

and (c) cooperation with other agencies in services and projects for mentally retarded children.

The author served as director of the Hawaii program during the period of study was conducted and had as program objectives: (a) assessment of needs, (b) in-service training of personnel, (c) coordination of services, and (d) planning for evaluation of results. She discusses each of these aspects of the program in her report.

## References

---

- BAUMGARTNER, BERNICE B. *A curriculum guide for teachers of trainable mentally handicapped children*. Springfield, Illinois: Superintendent of Public Instruction, Circular Series B-2, 1955.
- GOLDSTEIN, H. *Report number two on study projects for trainable mentally handicapped children*. Springfield, Illinois: Superintendent of Public Instruction, 1956. (a)
- . "Lower limits of eligibility for classes for trainable children." *Except. Child.*, 1956, 22: 226-27. (b)
- GOLDSTEIN, H., AND SEIGLE, DOROTHY. *A curriculum guide for teachers of the educable mentally handicapped*. Springfield, Illinois: Superintendent of Public Instruction, Circular Series B-3, No. 12, 1958.
- KIRK, S. A. *Public school provisions for severely retarded children*. Albany, New York: Interdepartmental Health Resources Board, 1957.
- Report of the commission on mental retardation*. Springfield, Illinois: Department of Public Welfare, 1958.
- SUPERINTENDENT OF PUBLIC INSTRUCTION. *Report on study projects for trainable mentally handicapped children*. Springfield, Illinois: Superintendent of Public Instruction, 1954.
- TISDALL, W. J. "A follow-up study of trainable mentally handicapped children in Illinois." *Amer. J. Ment. Def.*, 1960, 65: 11-16.
- WEINER, BLUMA. "Hawaii's public school program for mentally retarded children." Unpublished doctoral dissertation, University of Illinois, 1958.



# Effects of Training the Mentally Retarded

---

The Institute for Research on Exceptional Children has been particularly interested in the effects of training on children with various deviations and has conducted a series of investigations on the results of training programs designed for exceptional children. The major studies on the effects of preschool and special class training for retarded children, tutoring for brain-injured, and a language development program for mongoloid children will be reviewed here.

## **EFFECTS OF PRESCHOOL TRAINING ON YOUNG MENTALLY RETARDED CHILDREN**

A five-year longitudinal study (Kirk, 1958; 1962) of the effects of preschool educational programs on young educable mentally handicapped children was undertaken by the Institute with the cooperation of the Champaign Public Schools, the State Department of Public Instruction, the University of Illinois, The Institute of Mental Health, and Lincoln State School. In the study, eighty-one educable mentally handicapped children were placed in four groups: (a) community experimental, (b) community contrast, (c) institutional experimental, and (d) institutional contrast. Both experimental groups received a regular nursery school program (adapted to individual mental levels) and clinical individual tutoring in areas of specific mental disabilities. Data analysis was done by case study and statistical comparison methods.

In general, beneficial effects of the training offered these retarded were shown. In one phase of the experiment three groups of children were compared: (a) those living in a foster home and receiving preschool training, (b) those living in an inadequate home and receiving preschool training, (c) twin and sibling controls of those who remained at home.

Table 1 shows that the greater the positive environmental changes that were made, the greater was the tendency to increase the rate of development.



TABLE 1.

	Foster Home Plus Preschool Education N = 4		Experimental Preschool Children N = 12		Twins and Sibling Controls N = 14	
	No.	Ratio	No.	Ratio	No.	Ratio
Increased in rate of development	4	1.0	8	2/3	2	1/7
Held original rate of development	0	0.0	3	1/4	7	1/2
Decreased in rate of development	0	0.0	1	1/12	5	5/14

Fifteen institutionalized preschool children who received training were compared to twelve contrast children who remained in the wards. The average Binet IQ for the trained group increased 10.2 points, whereas the contrast group dropped 6.5 points. Six of the group who received training as against none from the contrast group were successfully paroled from the institution.

In general, it was found that the preschool programs given the experimental groups had some favorable effects in accelerating the development of these young retarded children. Additional findings included:

1. Seventy per cent (thirty of forty-three) of the children who received preschool education showed an increase in rate of mental growth during the preschool period and retained that growth during the follow-up—a finding not to be expected if growth rate were absolutely determined by heredity or maturation.

2. The intelligence and social quotients of the experimental groups increased significantly ( $p < .05$ ) more than did those of the contrast groups who did not receive training.

3. Preschool training was more effective with the culturally deprived than with the group with organic problems.

Kirk concludes that somatopsychological factors and the cultural milieu (including schooling) are capable of influencing the functional level or rate of development within the limits determined by genetic or organic factors.

#### EFFECTS OF SPECIAL CLASS TRAINING

A second study of the effects of training on mentally retarded children is currently entering the final year of a four-year project. The

purpose of this special class project (Goldstein, Jordan, Moss, 1962) is to evaluate the effects of a special class program on the social and academic development of mentally retarded children in order to determine the efficacy of such special classes.

Attempts have been made for the last thirty years to demonstrate that educable mentally retarded children do profit more from being placed in special homogeneous classes than from being left in the regular classes. None of the studies has been able to demonstrate the value of these classes due to an inability to control selection factors (Kirk, 1960). Typically, retarded children who are placed in special classes have more serious difficulties academically and socially than children with similar IQ's who are left in regular classes.

In the present study, after screening all first-grade children in twenty cooperating school districts (none of which previously had special classes), approximately 130 children were identified at first-grade level as being educable mentally retarded. These children were divided by random means into those who would attend special classes and those who would remain in the regular classes. The experimental and control children are to be followed through four academic years and evaluations made of their intellectual, academic, social, and personality development. The teaching methods and educational program in the special classes are based on the hypothesis that insightful and conceptually based learning will be retained longer and will better facilitate generalization, transfer, and autonomous thinking than would rote, lecture, or fact-dissemination-type teaching.

At the end of one year, in which the reading program in the special classes had been largely readiness oriented, the control children were clearly superior to the experimentals on reading test scores (Jordan, 1961). However, present indications, at the end of two years, are that children in special classes do as well academically as children in regularly classes and, in some areas, may be superior. The children in special classes appear to have a better background of basic knowledge of the world about them (*see* "Test of Basic Information (TOBI)," page 11). The special class children also demonstrated a greater willingness to try difficult tasks while the retarded children in the regular classes give up easily or become disturbed when confronted with a difficult task.

Both experimental and control groups showed an average IQ increase of about seven points during the first year and a stabilizing at that level during the second year.

A study of the productive thinking of the experimental and control retarded and a group of normally intelligent children showed that the

special class retarded children were superior to the retarded children who remained in the regular grades in verbal fluency, originality, and flexibility while no differences were found on non-verbal originality and elaboration (Tisdall, 1962). Tisdall attributes these findings to the training of the special class teachers, the directed discovery method of teaching, the classroom atmosphere and size, and certain activities.

#### **TUTORING BRAIN-INJURED CHILDREN**

As a result of the findings of the preschool project (Kirk, 1958; 1962), in which culturally deprived children made better progress than brain-injured children, further research was undertaken to discover whether individual tutoring could favorably affect verbal and non-verbal intelligence, language development, perceptual abilities, qualitative thinking, personality development, and social maturity of brain-injured retarded children within an institution (Gallagher, 1960). Dixon State School and the Illinois Department of Public Welfare cooperated with this project, in which forty-two brain-injured retardates were given one period of individual tutoring daily. For the first two years, twenty-one of the forty-two children were tutored, while the other twenty-one served as the control group. During the third year only the twenty-one control children received tutoring.

Six major findings of this study were:

1. The individual tutoring methods used did bring about intellectual improvement in some brain-injured mentally retarded children.
2. Verbal skills showed more improvement than non-verbal, but all children had extreme difficulty at higher abstract levels of conceptualization.
3. The eight-to-ten year olds showed significantly more improvement than did the ten-to-twelve year olds.
4. Certain behavioral changes, especially an increased ability to pay attention, were noticed during tutoring.
5. When tutoring stopped, the children tended to regress to previous lower developmental levels or to maintain the present level without further increase.
6. There was a wide range of individual differences among these brain-injured mentally retarded children, both in behavioral characteristics of the children and in their responses to tutoring.

Educational implications and further applications of the findings are presented by Gallagher (1962a).

In a follow-up study (Gallagher, 1962b) of the changes in verbal

and non-verbal ability of these brain-injured mentally retarded children (one group two years and another group one year after cessation of tutoring), Stanford-Binet and Leiter International Performance scores were reported for thirty-three of the original forty-two subjects. Both groups showed a significant drop in verbal IQ scores (Stanford-Binet), but no such decrease on non-verbal tests. Analysis of these data and those from other studies are felt to support the contention that training can modify developmental rates permanently, unless the gains are suppressed or lost by a non-responsive, unstimulating environment such as that to which these institutionalized brain-injured mentally retarded returned after tutoring.

#### **TRAINING OF PSYCHOLINGUISTIC DISABILITIES**

Following the development of the Illinois Test of Psycholinguistic Abilities (described on pages 8 to 11), research was initiated for the purpose of determining the educability of psycholinguistic disabilities in mentally retarded children. Kirk, Kass, and Bateman (1962), utilizing a case-study method, reported: (a) the results of pre- and post-testing before and after periods of individual remediation, and (b) results of remediation on general intelligence, academic achievement, and behavior. Without exception, the children who received remedial instruction over a period of nine or more months made improvement significantly above that expected from maturation in their psycholinguistic deficits. Although no definitive conclusions were made, since the research is still in progress, it appeared that the younger children made more generalized improvement than did the older ones. The methods of remediation for this new field are in the process of being elaborated on and improved.

The major purpose of this research is to develop remedial procedures for children who are functioning as mentally retarded on the basis of retarded development and low intelligence test scores, but who can be trained to function at a higher level when their psycholinguistic disabilities have been ameliorated.

#### **EFFECTS OF TRAINING MONGOLOID CHILDREN**

An investigation to determine whether a specific intellectual function — language ability — could be improved in mongoloid children was undertaken by Kolstoe (1958). McNeill's (1954) survey of developmental patterns of mongoloid children's abilities had found that their most retarded area was language ability. For this reason, plus the reasonableness of expecting some response to environmental influence and specific training in the language area, Kolstoe developed and evaluated



a program of intensive, individual language training. The mean IQ of the thirty mongoloids included in the randomly determined experimental and control groups was 23, mean MA 2-2. Although the children under training made slight gains, particularly in labelling objects and pictures and in word association functions, the results as a whole tended to confirm other findings (Goldstein, 1956a, 1956b) that children in this intellectual ability group do not benefit substantially from specific training.

## References

---

- GALLAGHER, J. J. *The tutoring of brain-injured mentally retarded children*. Springfield, Illinois: Charles C. Thomas, 1960.
- . "Educational methods with brain-damaged children." In *Current Psychiatric Therapies*, Vol. II, edited by J. Masserman. New York: Grune and Stratton, 1962; pp. 48-55. (a)
- . "Changes in verbal and non-verbal ability of brain-injured mentally retarded children following removal of special stimulation." *Amer. J. Ment. Def.*, 1962, 66: 774-81. (b)
- GOLDSTEIN, H. *Report number two on study projects for trainable mentally handicapped children*. Springfield, Illinois: Superintendent of Public Instruction, 1956. (a)
- . "Lower limits of eligibility for classes for trainable children." *Except. Child.*, 1956, 22: 226-227. (b)
- GOLDSTEIN, H.; JORDAN, LAURA J.; AND MOSS, J. W. *Early school development of low IQ children: A study of special class placement*. United States Department of Health, Education, and Welfare, Sae 8204, HEW 619, Interim Report, July 1959-June 1961. Urbana, Illinois: Institute for Research on Exceptional Children, University of Illinois, 1962.
- JORDAN, LAURA J. "The efficacy of a reading readiness program with the educable mentally retarded." Unpublished doctoral dissertation, University of Illinois, 1961.
- KIRK, S. A. *Early education of the mentally retarded—an experimental study*. Urbana, Illinois: University of Illinois Press, 1958.
- . "Effects of educational treatment." In *Mental retardation*, edited by R. L. MASLAND, R. E. COOKE, AND L. C. KOLB, Res. Publ. Assoc. Nerv. Ment. Dis., Vol. 39. Baltimore: Williams and Wilkins Co., 1962; pp. 289-94.
- . "Are special classes beneficial?" *Slow Learn. Child*, 1960, 7: 11-14.



- KIRK, S. A.; KASS, CORRINE E.; AND BATEMAN, BARBARA D. "The educability of psycholinguistic functions in retarded children." Illinois State Department of Mental Health, Project 1766, Progress Report, July 1961-March 1962. Urbana, Illinois: Institute for Research on Exceptional Children, University of Illinois, 1962.
- KOLSTOE, O. P. "Language training of low-grade mongoloid children." *Amer. J. Ment. Def.*, 1958, 63: 17-30.
- MCNEILL, W. D. D. "Developmental patterns of mongoloid children: A study of certain aspects of their growth and development." Unpublished doctoral dissertation, University of Illinois, 1954.
- TISDALL, W. J. "The efficacy of a special class program on the productive thinking abilities of educable mentally retarded children." Unpublished doctoral dissertation, University of Illinois, 1962.

## Effects of Handicapped Children on Families

---

The impact of the exceptional child on his family is an important but relatively ignored factor in his life. The ways in which the family handles the presence and problems of a deviating child will affect the emotional, social, and educational development of the child.

The effects of a severely retarded child on the family have been systematically studied from a sociological viewpoint by Farber. The studies reported here deal with the types of family crisis precipitated by the presence of the retarded child, special difficulties involved in keeping the child at home, factors in the decision to institutionalize the retarded child, and family adjustment to the child's institutionalization. The findings are based on data obtained by interviews and questionnaires completed by two samples: (a) 240 families with a severely retarded child interviewed in 1955-56, and (b) 268 families seen in 1958-59 whose retarded child lived at home.

### **EFFECTS OF THE RETARDED CHILD ON MARITAL INTEGRATION**

In the first study (Farber, 1959) the effects of the retarded child on marital integration of the parents in cases of supportive and non-supportive community interaction were examined. Marital integration was the measured agreement on ranking of values and amount of role tension between husband and wife (Farber, 1957). In the families whose retarded child was at home, marital integration was lower when the retarded child was male than when the child was female, a finding more pronounced for lower social status families than for middle class homes. As the retarded boy grew older his disruptive influence on marital integration increased. The marital integration of parents with a retarded girl at home or in an institution and parents with a retarded boy in an institution were equal, and all three were higher than the integration of families with a retarded boy at home.

An analysis of supportive and non-supportive community interaction showed that frequent contact with the wife's mother was related to high marital integration. Analysis of frequency of church attendance was inconclusive, but the Catholic church was apparently supportive, in that marital integration of Catholics was not affected by institutionalization or non-institutionalization of the retarded child, while non-Catholics had lower marital integration when the retarded boy was at home.

Low marital integration was associated with frequent interaction with the husband's mother, frequent participation with friends and neighbors by poor-marital-risk mothers, and husband's active contact with formal organizations (not relative to religion or retardates).

#### **THE RETARDED CHILD AND HIS SIBLINGS**

One of the arguments for the institutionalization of a retarded child is that the presence of a retarded child in the home affects the adjustment of the siblings. A series of studies relating to this problem (Farber, 1959; 1960; 1963) showed the following:

1. As the retarded child grew older, his status in the sibling group changed so that ultimately he was regarded as the youngest child. With increasing age, the siblings took a more superordinate role with respect to the retarded child.

2. Normal brothers and sisters who interacted with their retarded sibling differed in their life goals from other siblings. Both boys and girls who had sustained interaction with their retarded siblings stressed as life goals such items as (a) devotion to a worthwhile cause, and (b) making a contribution to mankind. On the other hand, they placed less emphasis than the infrequent interactors upon having many close friends, on focusing life around marriage and the family, and on being a respected community leader. The study suggested that normal siblings come to regard sustained interaction with retarded siblings as a duty. In the performance of this duty, the normal siblings internalized welfare norms and turned their life careers toward the improvement of mankind or at least toward life goals which require much dedication and sacrifice.

3. The adjustment of normal siblings was unaffected by the sex of the retarded child or social status of the family, but was influenced adversely by a high degree of dependence on the part of the retarded child. Sisters tended to be better adjusted when the retarded child was institutionalized than when the retarded child was at home, whereas the opposite was true of brothers as they seemed less well adjusted when the retarded child was institutionalized.

## **FAMILY ORGANIZATION AND THE RETARDED CHILD**

A further study (Farber, 1960) dealt with the particular kinds of organization of roles and values related to high family integration. Three types of family organization were isolated — child oriented, home oriented, and parent oriented. A fourth residual category was comprised of those families lacking a common focus or organization, and those organized in a manner detrimental to achieving common goals. It was found that families having any of the presumably integrative orientations were more integrated whether the child was at home or in an institution than those lacking a consistent orientation. This was most pronounced in comparisons of families in unfavorable circumstances.

Two types of family crisis were considered: (a) the tragic crisis in which the parents see the aims, aspirations, and expected "happy family" life as frustrated by the retarded child, and (b) the role-organization crisis in which the parents are faced not by the frustration of unrealizable goals but by handling the continual care problem which is disrupting to the usual life cycle of the family. High socio-economic status families with their characteristic focus on long-range goals are more vulnerable to the tragic crisis, while the concern of lower socio-economic status families with parental control and immediate "getting along" leads to more pronounced role-organization type of crisis.

## **INSTITUTIONALIZATION OF THE RETARDED CHILD**

Investigations to this point indicated that institutionalization itself was not a major solution to the problem of the severely retarded child and his family. Rather, family orientation to the presence of a retarded child was closely related to marital integration. But certain findings suggested that institutionalization of the retarded child perhaps was conducive to the development of an integrative family organization. Another study (Farber, Jenné, and Toigo, 1960) was undertaken to provide more conclusive evidence pertaining to the interpretation of these earlier findings. The results supported these interpretations: (a) a retarded boy placed more stress on the family than did a retarded girl, (b) institutionalization of the retarded child reduced pressures on parents and sisters of the retarded child, and (c) religion and social status were significant factors in determining the family's ability to manage the child at home. The decision of the parents to institutionalize a severely retarded child was shown to be related to demographic-ecological, social organizational, and social psychological variables.

Downey (1962) studied parental interest in the institutionalized



severely retarded child. He found that the most significant factor in parent interest was the age at which the child was placed in an institution. Parents tended to sustain their interest in the child when he was placed in the institution at an older age. The high-interest parents placed the child in an institution because of their concern for the child's future, and because they felt they could no longer adequately care for the child. Low-interest parents institutionalized the child because of their concern for other members of the family, especially the normal children, and because of advice from friends and others outside the family. The low-interest parents tended to come from higher socio-economic levels than did the high-interest parents.

#### **FAMILY KINSHIP SYSTEMS AND THE ADJUSTMENT OF CHILDREN**

A two-year sociological investigation of kinship relations in the contemporary American family has just been begun by Farber. One of the areas to be explored is the impact of deviations in kinship systems on the socialization and adjustment of the children. Kinship relations of thirty families with well-adjusted children will be compared with those of thirty families whose children are maladjusted.

#### **GROUPS OF ILLINOIS PARENTS OF RETARDED CHILDREN**

Goldstein (1961) conducted a study to determine the degree of success attained by Illinois Parents of Severely Retarded Groups in obtaining total programs (diagnostic, counseling, workshops, schooling, day care, recreation, etc.) for their retarded children during recent years. Questionnaires returned by forty presidents of groups (representing 56 per cent of the known groups) revealed:

1. Many groups devoted their efforts almost exclusively toward obtaining schooling for their children, thus in effect restricting membership to parents of school-age children.
2. The achievement of total programs is far from being realized. The major reasons given for the gaps in services available included cost, waiting lists, and distance.
3. The metropolitan area groups expressed greatest present concern over the child's future care and treatment (sheltered workshop, insurance, etc.) while the downstate groups mentioned lack of family counseling, public school provisions, and sheltered workshops.

Goldstein concludes that the persistence of these problems since the inception of such groups and the apparent focusing of the groups on specific, local (rather than total program) needs raises a question as to the expectation of ever achieving state or nationally recommended



total program goals under the present autonomous local group structures.

#### THE CEREBRAL PALSIED CHILD IN THE FAMILY

In an evaluation of the social and emotional development of the cerebral palsied twin, Shere (1954) found that the parents accepted the non-cerebral palsied twin in an objective and positive way, but became so immersed in the problems of the cerebral palsied twin that the non-cerebral palsied misinterpreted their objectivity as rejection and he behaved as an insecure, rejected child. The condition of cerebral palsy was interpreted as thus being more harmful to the social and emotional development of the non-cerebral palsied twin than to the cerebral palsied twin. The behavior of the cerebral palsied twin was in general more desirable (more cheerful, less stubborn, less excitable, more patient, less jealous, less overly sensitive) than that of the non-cerebral palsied twin.

#### References

---

- DOWNNEY, K. J. "Parental interest in the institutionalized, mentally retarded child." Unpublished doctoral dissertation, University of Illinois, 1962.
- FARBER, B. "An index of marital integration." *Sociometry*, 1957, 20: 117-34.
- . "Effects of a severely mentally retarded child on family integration." *Monogr. Soc. Res. Child Develpm.*, 1959, 24.
- . "Family organization and crisis: Maintenance of integration in families with a severely mentally retarded child." *Monogr. Soc. Res. Child Develpm.*, 1960, 25.
- . "Effects of a severely mentally retarded child on the family." In *Readings on the exceptional child*, edited by E. P. TRAPP AND P. HIMELSTEIN. New York: Appleton-Century-Crofts, 1962, 227-46.
- . "Kinship systems and emotional disturbance in children." Psychiatric Training and Research Fund, Illinois State Department of Mental Health, Project 17-103, University of Illinois, in progress.
- FARBER, B.; JENNÉ, W. C.; AND TOIGO, R. "Family crisis and the decision to institutionalize the retarded child." *Counc. Except. Child. Monogr. Series*, 1960, Series A, No. 1.
- FARBER, B.; AND JENNÉ, W. C. "Interaction with retarded siblings and life goals of children." *Marriage Fam. Liv.*, 1963, 25: 96-98.

- GOLDSTEIN, H. "A study of the status of parents' groups in Illinois: Unmet needs." Unpublished manuscript, Institute for Research on Exceptional Children, University of Illinois, 1961.
- SHERE, MARIE O. "An evaluation of the social and emotional development of the cerebral palsied twin." Unpublished doctoral dissertation, University of Illinois, 1954.

## Programed Instruction

---

The interest of the Institute in the improvement of instructional procedures in special education led to the initiation of research on programed learning.

The first study in the area of programed instruction was conducted by Falconer (1959) on deaf children. He constructed a device to teach word recognition using an operant conditioning technique. Young deaf children were allowed to use the teaching machine in the classroom for five minutes a day. When the children had learned fifteen words (in a ten-day period), they were given a paper and pencil test in which they were required to match a word with a picture from among five pictures. They made only one or two errors on the paper and pencil test showing a high transfer from the machine to workbook material. Two weeks later the children were again tested on the same fifteen words which had not been used in the classroom during this period. Retention was high; in fact, their score on the paper and pencil retest was slightly higher than on the test given immediately following learning.

In 1959 Stolurow organized and directed research on programed learning with mentally retarded children under a grant from the U.S. Office of Education Cooperative Research Program titled: Principles for Programing Learning Materials in Self-Instructional Devices for Mentally Retarded Children. The research in this area was directed toward developing a set of principles or strategy descriptions which would provide guidance to teachers and program developers in preparing programed material. Areas explored included: (a) the effect of organization of program steps to be learned, (b) the aptitudes and abilities related to successful learning and retention of programed instruction under different conditions; and (c) the management of stimuli (prompting and confirmation) to enhance learning and retention. The following studies were conducted under this project.

Cartwright (1962) studied the effects of two organizations of a

program which was designed to teach the concept of a fraction. Forty educable mentally handicapped children of high school age, enrolled in the Evanston Special Education Program, served as subjects. He found that a sequence of steps organized to illustrate concepts of equality, inequality, etc., produced scores that correlated with specific relevant ability scores such as reading comprehension and arithmetic achievement, whereas the unsystematic sequence of the same steps resulted in scores which correlated with the more general ability measures such as full scale IQ scores and total language performance. The systematic organization, therefore, compensated more for general ability than for specific abilities. The reverse was true of the unsystematic sequence of fractions. The systematic sequence resulted in significantly greater retention than the unsystematic sequence. However, the systematic sequence resulted in less transfer to new problems than did the unsystematic sequences.

Two investigations of programing of sight vocabulary material with educable mentally handicapped children were conducted. Two sequences of presentation of material — Prompting S-R and Confirmation S-R — were compared. These two sequences differ only in the order of presentation of the frames containing the eliciting stimulus. When the S-R frame preceded the discrimination frame, the sequence was called a Prompting S-R sequence. A Confirmation S-R sequence resulted when the eliciting stimulus followed the discrimination frame. Using forty institutionalized educable mentally handicapped children, Stolurow (1961b; 1962) found that the Prompting S-R strategy resulted in efficient initial learning, but retention after higher levels of over-learning was better with the Confirmation S-R strategy. This was true after twenty-four hours, one week, and one month.

Stolurow and Lippert (1962) then conducted a further investigation using twenty-five educable mentally handicapped children attending public school classes. This study was aimed at establishing an optimum level of learning and retention by combining the prompting and confirmation strategies into a single program. Their findings were: (a) greater efficiency in learning resulted from increasing the total number of trials providing prompting and then confirmation, (b) best retention scores (recall and recognition) were obtained when vanishing was introduced after as many as twelve Prompting S-R trials and then twelve Confirmation S-R trials, (c) mental age and retention scores were significantly correlated, and (d) children with MA's from five and one-half to six and one-half years showed appreciable retention after twenty-four hours, while children with mental ages below five and one-half showed little retention. Thus EMH children appear to

be able to acquire a sight vocabulary once they are at the five and one-half MA level.

When the ITPA was administered to these same children (Lippert and Stolurow, 1963), the following subtests correlated positively with retention of sight vocabulary learned by this prompting-confirmation strategy: visual decoding, visual-motor association, visual motor sequential, and auditory vocal automatic. Motor encoding, auditory decoding, and auditory-vocal association correlated negatively with retention. Since the learning task utilized primarily the visual-motor rather than the auditory-vocal channel, these findings should be expected and provide a form of validation of the ITPA not previously available.

One outgrowth of this research project on principles of programing learning materials for use in self-instructional devices by the mentally retarded was a comprehensive monograph on automated teaching (Stolurow, 1961) and four summary papers (Stolurow, 1960a; 1960b; Stolurow and West, 1961; Stolurow, 1963). Another outgrowth of this research was the development and preliminary testing of a teaching machine, IDIOT (Illinois Device for Independent Operation and Teaching) in cooperation with the Industrial Education Department of the University of Illinois. The third generation of this device was recently completed and is being tested. A third outgrowth of this research is the development of a technique for generating frames for a program from a set of rules relating to a coded set of language elements. This technique is being programed for a computer so it can generate an instructional program on demand to meet a specific set of requirements with respect to such factors as organization, amount of vanishing, and degree of repetition.

## *References*

---

- CARTWRIGHT, G. P. "Two types of programed instruction for mentally retarded adolescents." Unpublished master's dissertation, University of Illinois, 1962.
- FALCONER, G. A. "A mechanical device for teaching word recognition to young deaf children." Unpublished doctoral dissertation, University of Illinois, 1959.
- LIPPERT, H. T., AND STOLUROW, L. M. "Teaching machines and programed



instruction in special education." Unpublished paper presented before Council for Exceptional Children Convention, Philadelphia, Pennsylvania, 1963.

STOLUROW, L. M., "Automation in special education." *Exceptional Child*, 1960a, 27: 78-83.

———. "Teaching machines and special education." *Educ. Psychol. Measmt.*, 1960, 20: 429-48.

———. "Teaching by machine." *Cooperative Res. Monogr.*, 1961a, No. 6.

———. "Prompting vs. confirmation sequences and over-learning in the automated teaching of sight vocabulary." *Program XIV International Congress of Applied Psychology*, Copenhagen, 1961b, 210-11.

———. "Programmed instruction for the mentally retarded." Chapter IX in *Review of Educ. Research*, February, 1963, 126-36.

STOLUROW, L. M., AND LIPPERT, H. T. "Prompting, confirmation, and vanishing in the teaching of a sight vocabulary." United States Department of Health, Education, and Welfare, Sae 8370, Technical Report. Urbana, Illinois: Institute for Research on Exceptional Children, University of Illinois, 1962. Also in *Educational technology: Readings in programmed instruction*, edited by John P. De Cecco. New York: Holt, Rinehart and Winston, 1964.

STOLUROW, L. M., AND WEST, L. J. "Teaching machines and self-instructional programing." *Delta Pi Epsilon J.*, 1961, 3: 1-32.

## Gifted Children

---

Special education is concerned with all areas of exceptionality, including gifted children. Research on the educational programs, intellectual functioning, and social status of gifted children has been conducted at the Institute for Research on Exceptional Children.

### **EDUCATIONAL PLANNING FOR THE GIFTED**

An important area within the field of education of the gifted is that of the social status and educational adjustment of gifted children. Gallagher and Crowder (1957; Crowder and Gallagher, 1957) began an investigation of the extent to which highly gifted (Binet IQ above 150) children had difficulty in adjusting to a regular elementary classroom. An extensive battery of intelligence, achievement, social acceptance, and personality development measures revealed that about one-third of the thirty-five children were very well adjusted in all areas studied, and only a few had serious adjustment difficulties. The major difficulties of the group as a whole were lack of motivation and creativity and minor personal adjustment problems.

The variety of individual differences found in this group of highly gifted children led directly to the next phase of research — a study of the effectiveness of a case study approach (Gallagher, Greenman, Karnes, and King, 1960) to the education of gifted children. A curriculum adjustment committee studied each gifted child included in the earlier study and an additional nineteen youngsters who met the first study criteria. The range of curriculum changes utilized to facilitate total academic, emotional, and social adjustment of each particular child was great and included transferring a child to a new school, acceleration (in three cases) revamping seat assignments, referral for treatment of speech and emotional problems, and so forth.

Evaluation of the effectiveness of these varied adjustments was done subjectively by parents' and teachers' reports and objectively by tests administered at the beginning and end of the program. The objective

tests showed little, if any, benefits accrued in academic achievement, self-concept, or social status. Although parents and teachers reported gains, there was little agreement between them on which children made what kind of improvement. It was concluded that the success of these individually planned programs for gifted was limited by teacher deficiencies in curriculum skills, lack of adequate auxiliary facilities such as psychologist, reading specialist, or social worker, and the inability of the school to deal with basic problems such as those which arise in home situations.

Programs for gifted children in Illinois were reviewed and analyzed in a report by Gallagher and Nelson (1958), an analysis of research on the gifted was prepared by Gallagher (1960), and a book on teaching the gifted was published recently (Gallagher, 1964).

A four-year project (Gallagher and Aschner, 1963) is now underway on the productive thinking of gifted children in the context of classroom verbal interaction. Research has suggested that gifted children do not effectively or fully use their potential for productive thinking in the classroom situation. The current project is designed to identify productive thought processes of gifted junior high school students and to explore relationships between productive thinking and variables in the classroom which may affect it. The long-term goal of this research is the experimental determination of teaching methods that foster productive thinking in the classroom and the identification of the factors that influence productive thinking in the total educational programs of our schools. In-class performance of gifted children will also be related to a wide variety of intellectual and personality characteristics and to family attitudes and behavior (Gallagher and Aschner, 1963).

A major undertaking in this kind of research has been the development and evaluation of suitable measuring instruments for the classification and analysis of verbal interaction in the classroom (Aschner, Gallagher, Perry, Afsar, Jenné, and Farr, 1962). (*See* page 12, "Analysis of Classroom Verbal Interaction.")

#### **INTELLECTUAL CHARACTERISTICS OF THE GIFTED**

The intellectual patterns of highly gifted elementary school children on the Wechsler Intelligence Scale for Children were described and analyzed by Lucito and Gallagher (1960). While the gifted children showed no real weaknesses in the intellectual traits, they were strongest on tests which were loaded with a verbal comprehension factor (*viz.*, similarities, information, vocabulary, etc.). No significant differences were noted between Performance and Verbal IQ's, but this may have

been an artifact resulting from the ceiling imposed by the test. No sex differences were found. The implications of these patterns of intellectual strengths for educational planning are discussed and the large role played by individual variation noted.

Intellectual patterns of different types of exceptional children were compared by Gallagher and Lucito (1961) in terms of the abilities measured by the WISC subtests of seven samples of gifted, average, and retarded individuals (total  $n = 1070$ ). There was internal consistency in the patterns of subtest strength and weaknesses found in the three samples of gifted and the three samples of retarded, supporting the contention that the various ability levels do show specific patterns of intellectual functioning. The retarded were weakest on subtests including a factor of verbal comprehension and strongest on a perceptual organization factor. This finding was exactly reversed for the gifted. The average group showed patterns different from both the gifted and retarded.

Two groups of intellectually superior children — one group high, the other low in divergent thinking — were studied by Smith (1962). The high divergent children tended to be more autonomous in their attitudes, and their responses showed a trend toward more freedom, self-assuredness, and desire to work than was shown by the low divergent children.

#### **SOCIAL STATUS OF THE GIFTED**

In a general study of the social status of children as related to intelligence, propinquity, and social perception, Gallagher (1958a) found, in concurrence with other research, that social popularity was positively related to intellectual status. However, there was little tendency for the bright children to choose other bright children as friends. The brighter children were somewhat superior in social perception as measured by their ability to predict who would choose them as friends.

The social acceptance of highly gifted children (Binet IQ 150+) was studied (Gallagher, 1958b) by sociometric techniques. These children were very popular with their classmates, although a slight trend was found for this popularity to decrease as intelligence increased above 165. The gifted were chosen as friends by children from all levels of intellectual ability, and they chose their friends from all levels.

In a comparison of the behavior of intellectually bright and dull children in an independence-conformity situation, Lucito (1959) found that on both ambiguous and non-ambiguous tasks bright children were significantly less conforming to their peers than were the dull children. The extent of conformity shown on the two levels of tasks



(ambiguous and non-ambiguous) varied more for the bright than for the dull children. This evidence suggests that intelligence is inversely related to conformity behavior.

The findings constitute indirect evidence to support certain assumptions: (a) the most probable role the bright children perceive as their aim is one of defining reality for themselves and others, while the dull play the role of accepting other's definitions; (b) there is generality of conformity behavior across situations; (c) bright children are more task oriented, while dull children are more concerned with peer group relations.

## References

---

- ASCHNER, MARY JANE; GALLAGHER, J. J.; PERRY, JOYCE M.; AFSAR, SIBEL S.; JENNÉ, W. C.; AND FARR, HELEN L. K. "A system for classifying thought processes in the context of classroom verbal interaction." Unpublished dittoed manuscript, University of Illinois, Institute for Research on Exceptional Children, 1962.
- CROWDER, THORA, AND GALLAGHER, J. J. "The adjustment of gifted children in the regular classroom: Case studies." *Except. Child.*, 1957, 23: 353-63, 396, 398.
- GALLAGHER, J. J. "Social status of children related to intelligence, propinquity, and social perception." *Elem. Sch. J.*, 1958, 58: 225-31. (a)
- . "Peer acceptance of highly gifted children in elementary school." *Elem. Sch. J.*, 1958, 58: 465-70. (b)
- . "The gifted child in the elementary school." *What Research Says to the Teacher*, No. 17. Washington, D.C.: National Education Association, Amer. Educ. Res. Assoc., 1959.
- . *Analysis of research on the education of gifted children*. Springfield, Illinois: Office of the Superintendent of Public Instruction, 1960.
- GALLAGHER, J. J., AND ASCHNER, MARY JANE. "A preliminary report on analyses of classroom interaction." *Merrill-Palmer Quarterly*, 1963, 9: 183-94.
- GALLAGHER, J. J., AND CROWDER, THORA. "The adjustment of gifted children in the regular classroom." *Except. Child.*, 1957, 23: 306-12, 317-19.
- GALLAGHER, J. J.; GREENMAN, MARGARET; KARNES, MERLE; AND KING, A. "Individual classroom adjustments for gifted children in elementary schools." *Except. Child.*, 1960, 26: 409-22, 432.



- GALLAGHER, J. J., AND LUCITO, L. J. "Intellectual patterns of gifted compared with average and retarded." *Except. Child.*, 1961, 27; 479-82.
- GALLAGHER, J. J., AND NELSON, W. H. (Eds.) "Report on programs for gifted children in the state of Illinois." *Educ. Press Bull.*, 1958, 49: 9-33.
- LUCITO, L. J. "A Comparison of the independence-conformity behavior of intellectually bright and dull children." Unpublished doctoral dissertation, University of Illinois, 1959.
- LUCITO, L. J., AND GALLAGHER, J. J. "Intellectual patterns of highly gifted children on the WISC." *Peabody J. Educ.*, 1960, 38: 131-36.
- SMITH, R. M. "Perceptions of self, others, and certain environmental aspects of high and low divergent, intellectually superior children." Unpublished doctoral dissertation, University of Illinois, 1962.

## Children with Sensory Disabilities

---

In addition to the studies pertaining to children who deviate mentally — retarded and gifted — described above, the Institute personnel have conducted some investigations of children with defective vision and hearing.

In a study of sighted children's perceptions of the abilities of blind children, Bateman (1962a) found that personal acquaintance with blind children increased the positiveness of sighted children's appraisals of the capabilities of the blind. The greater the number of blind children a sighted child had known, the more positive were his perceptions. Positiveness of perception also increased with age and as a function of urban as contrasted with rural background.

Ashcroft (1960) investigated the errors made by blind children in oral reading of braille. He studied the errors of 728 children, grades two through six, and found a mean rate of five errors per 100 words read. Braille words with prescribed short forms and multiple cell contractions were the most frequent sources of error. The three problem areas of perception (e.g., missed dot), orientation (e.g., vertical alignment), and meaning (association) were analyzed. He suggested that careful selection and preparation of braille material can reduce errors.

Bateman (1962b) studied the reading and psycholinguistic processes of 131 partially seeing children in grades one through four and found that these children (a) were not appreciably retarded in reading achievement, (b) did not make significantly more or different errors in reading than do normals, and (c) did not (except the legally blind children) show serious impairment in the psycholinguistic visual-motor channel.

Other findings from the study revealed that: (a) the ratio of boys to girls enrolled in special classes and resource rooms for the partially seeing was two to one; (b) the mean Binet intelligence quotient for the total group was 100; (c) 40 per cent of the children had visual

acuity better than 20/70, 40 per cent were between 20/70 and 20/200, and 20 per cent were legally blind; and (d) some evidence suggested that learning disabilities, rather than poor visual acuity, might underlie the referral of some of these children to programs for the partially seeing.

Enc (1958) and Enc and Stolurow (1960) investigated the effects of a faster than usual word-per-minute rate of presentation of verbal material to blind children on learning and retention of material. A fast (wpm range 194–232) and a slow (wpm range 128–183) version of ten stories were presented to twenty-three blind subjects. The data were analyzed in terms of test and retest scores (number of questions answered correctly) per unit of listening time. The faster word-per-minute rate was found more effective per unit listening time for both initial learning and retention.

Falconer (1959), as described on page 40, demonstrated the feasibility of teaching word recognition to young deaf children by means of a mechanical device which does not require direct supervision by the teacher.

## References

---

- ASHCROFT, S. C. "Errors in oral reading of braille at elementary grade levels." Unpublished doctoral dissertation, University of Illinois, 1960.
- BATEMAN, BARBARA D. "Sighted children's perceptions of blind children's abilities." *Except. Child.*, 1962, 29: 42–46. (a)
- . "Reading and psycholinguistic processes of partially sighted children." Unpublished doctoral dissertation, University of Illinois, 1962 (b); *Counc. Except. Child. Res. Monogr. Series*, Series 1, No. 5, 1963.
- ENC, M. A. "The effect of two different WPM listening rates on learning and retention of blind school children." Unpublished doctoral dissertation, University of Illinois, 1958.
- ENC, M. A., AND STOLUROW, L. M. "A comparison of the effects of two recording speeds on learning and retention." *New Outlook for the Blind*, 1960, 54: 39–48.
- FALCONER, G. A. "A mechanical device for teaching word recognition to young deaf children." Unpublished doctoral dissertation, University of Illinois, 1959.

## Epilogue

---

The ten years of research described in the preceding sections represents an attempt to utilize an interdisciplinary, interagency approach to research relevant to handicapped and gifted children. In conjunction with research, the Institute has attempted to advance knowledge, prepare leaders at the doctorate and postdoctorate levels, and disseminate information through publications.

The general idea of concentrating research in a University center is now being duplicated in other universities. Many of these new centers have been manned by the thirty-five doctoral and postdoctoral students who have completed the program during the last ten years and are now serving in some capacity in research, teaching, and administration.

It will be noted that the research was generated primarily from the theories of education, psychology, sociology, and related behavioral disciplines. Although biological data and theories were used in some of the research projects, the major emphasis has been on behavioral research. The paucity of biologically oriented research has been partially due to the particular backgrounds of the staff of the Institute and partially due to the lack of biological laboratories and clinical materials on the campus.

At present writing, plans are being formulated and funds have been obtained to establish a residential center for sixty emotionally disturbed and mentally retarded children on the campus of the University. This center will include residential cottages, an outpatient clinic, a children's service building, a treatment school building, and a research facilities building. The latter will house the Institute for Research on Exceptional Children, psychophysiological laboratories, and research workers from the University in recreational therapy, social service, speech pathology, psychology, child psychiatry, and child development. With the Institute and other closely allied departments housed under the same roof, in purpose as well as in location, it is anticipated that

research and training will be expanded, and correlations of biological, psychological, sociological, and other data will be compiled and focused on the ultimate solution of our present problems in mental health and mental retardation. The next ten years will determine the value of the interdisciplinary approach.

SAMUEL A. KIRK

*Director*

*Institute for Research on  
Exceptional Children*







LC3965

c.2

K

Kirk, Samuel A. & Bateman, B. D.

10 Years of research.

Date Due			
10-22-88			
<del>10-22-88</del>			

AMERICAN FOUNDATION FOR THE BLIND  
15 WEST 16th STREET  
NEW YORK, N. Y. 10011

